

Air - Fed Incinerators

(AIR FED INCINERATOR BURNING DATA)
March 6, 1961

Dear Sir:

In accord with your request we are enclosing the following:

- (1) Copies of letters to and from selected manufacturers of small diesel engines.
- (2) Copies of letters to and from selected manufacturers of dry-type gas-cleaning equipment.
- (3) A recommended procedure for making the burning tests on the Model 1 unit at medium-high altitude particularly.
- (4) Ten copies each of Data Sheets Nos. 1 and 2 for your use during the burning tests.
- (5) Two copies of a graph titled "Figure 2. Estimated Effect of Altitude on Burning Rates".

Figure 2 is based on our discussion with you on February 27, 1961, and is our present estimate of the effect of altitude on burning rate. The data which you will obtain shortly at a medium-high altitude should enable us to fix the position of the dotted line on Figure 2 more accurately.

As a result of our phone call to Aerotec Industries, Inc., they are now preparing a design and quotation for a single stainless steel cyclone of large diameter for the Model 1 and Model 2 units. One other manufacturer's representative was in to inquire in more detail about the requirements for this dust collector. Also, a discussion is currently

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scheduled with a third manufacturer's representative.

Procurement information for the three Allen-Bradley, No. 1107, 220-volt, 50-cycle holding coils which you obtained recently from us will be incorporated into the working drawings of the Model 1 unit.

If you need any additional information, please do not hesitate to call us.

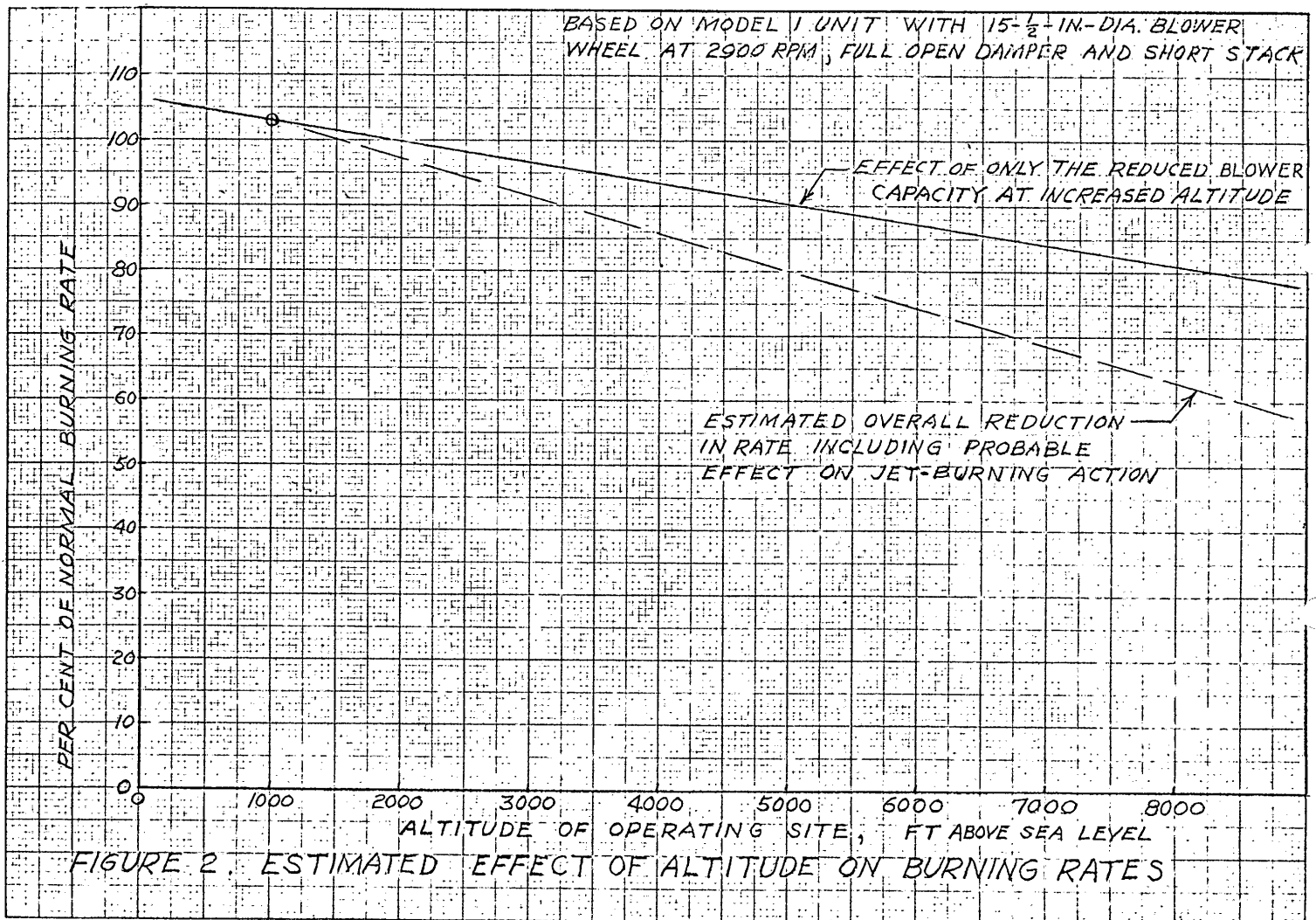
Sincerely,

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In Duplicate

Enclosures



RECOMMENDED PROCEDURE FOR BURNING TESTS

The following items will, of course, be fairly obvious to you, but are intended to help in obtaining data which can be compared directly with those obtained previously in our experiments.

Initial Check of Equipment

- (1) After the thermocouple is connected and checked for proper polarity by heating the end of the couple with a match, make a zero check on the Sim-Ply-Trol instrument. This is done by reading the temperature of the cooled thermocouple as indicated by the Sim-Ply-Trol and comparing this reading with the temperature of the air surrounding the thermocouple. If the Sim-Ply-Trol reading is different from the air temperature, adjust the screw on the front of the Sim-Ply-Trol to correct the reading. You will not need a very accurate thermometer for this; ± 5 F is close enough.
- (2) Zero the manometer by adding the proper amount of water or sliding the tube in its clips.
- (3) Adjust the cam on the door latch, if necessary, to minimize air leakage.

Preparation of Paper

- (1) Weigh the entire amount of paper before each test to conserve time for data taking during the test.

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- (2) Separate the paper into piles or increments of from 10 to 15 pounds, to "duplicate" the 12-1/2-pound average batch used previously. Identify the types of paper used in spaces provided on Data Sheet No. 1, which is supplied.
- (3) Prepare to burn at least 300 pounds, and preferably 500 pounds per test run.

Preliminary Data

- (1) Write the ambient air temperature, barometric pressure, and other data in the spaces provided at the top of the Data Sheet No. 1. If barometric pressure is obtained from an airport or local weather bureau station located at an altitude significantly different from that of the unit, estimate or determine both altitudes so that we can apply a correction to the barometer reading.
- (2) Measure the plenum pressure in the cold, clean unit before starting the burning test. Use a damper setting which corresponds to the "Full Open" position as shown on a copy of the Control Plate Drawing No. 354-306, Figure 1, which is supplied. Repeat this cold-air-flow check at the end of the test, but before cleaning the grid or unit, to obtain an indication of grid plugging. Clean the grid before making any subsequent test runs.

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Burning Procedure

- (1) Load about 50 pounds of paper into the unit for the initial charge.
- (2) After the charge is well ignited, which normally takes 2 to 5 minutes, begin feeding more paper. The early feedings can be made at intervals sufficiently short that the load level builds up quickly to about 12 in. below the bottom of the feeding door.
- (3) For the remainder of the test period, the required feeding intervals for maximum burning rate should be short, between 1-1/2 and 3-min, and can be judged by a combination of load level and drop-off in gas temperature. Usually, we feed when the stack temperature drops to 1000 or 1100 F.
- (4) Keep the air damper in the "Full Open" position as much of the time as possible, within the limitation of a maximum gas temperature of 1800 F; also, minimize the down time for loading to 15 seconds or less.
- (5) During the burn-out period after feeding, we have poked two or three times to break up clumps of paper and have also turned the air off momentarily to drop the paper off the grid, as you have done.

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Burning Data

- (1) The lower part of Data Sheet No. 1 and one or more copies of Data Sheet No. 2 will provide space for recording data during the burning period.
- (2) Samples of both data sheets with entries are attached to illustrate the amount of data needed. The temperature data are most important.

(3) _____ (4) _____ (5) _____

TEST NO. _____

WEIGHT OF ALL PAPER BURNED IN TEST	LB
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TIME FROM START TO BURNOUT _____ MIN., AVERAGE BURNING RATE _____ LB/HR